

Reflection on 20 Years of Architecture

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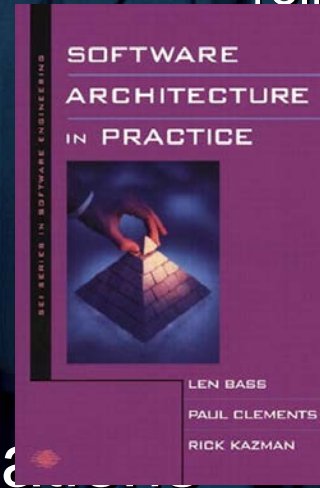
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In 1992

flight sim

STRUCTURAL



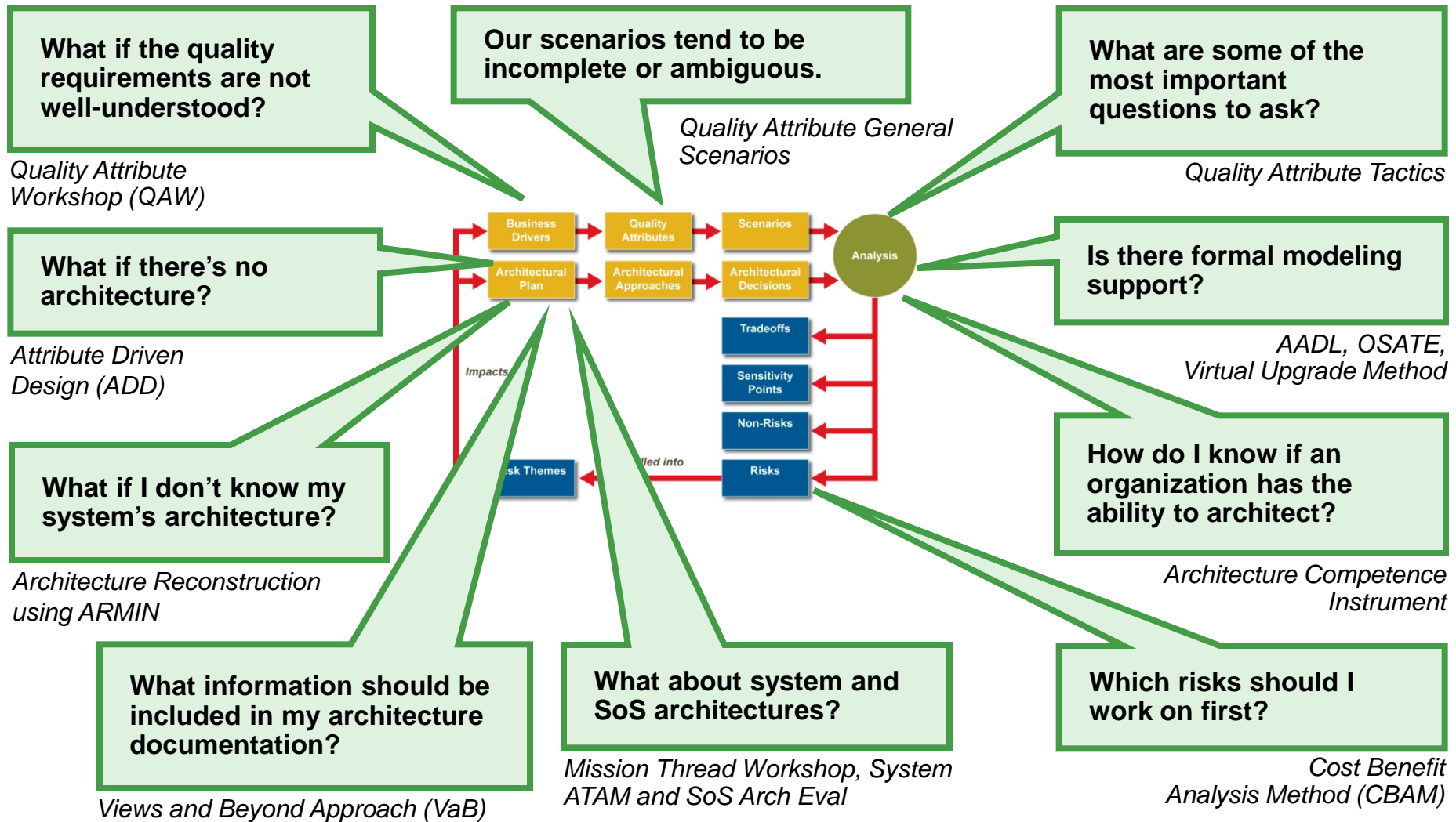
reliability
security
performance
QUALITY ATTRIBUTES

user interface
ADLS definitions

SOFTWARE ARCHITECTURE



From Architecture Evaluation....



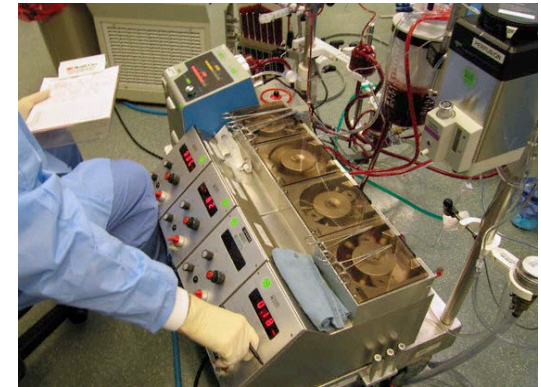
.. to Architecture-Centric Engineering



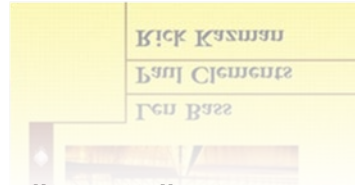
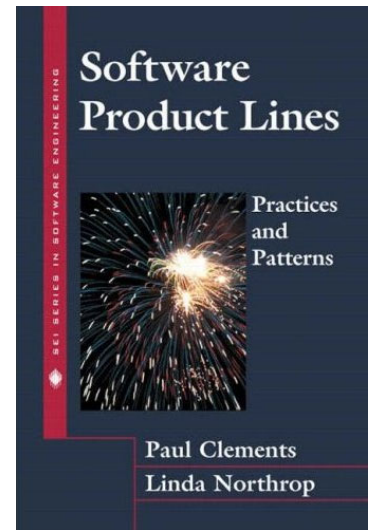
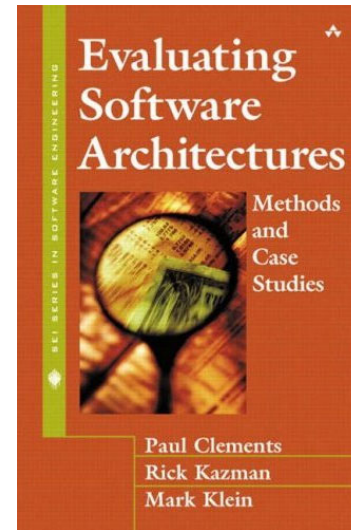
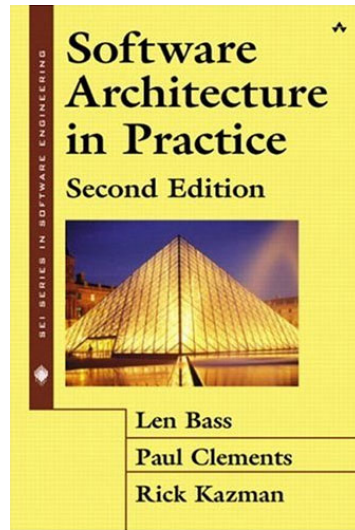
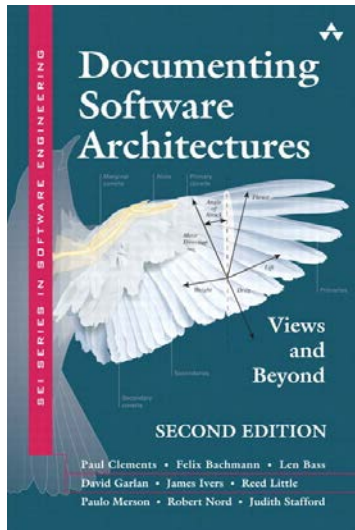
Architecture is of enduring importance because it is the right abstraction for performing ongoing analyses throughout a system's lifetime.

Architecture-Centric Engineering (ACE) is the discipline of using architecture as the focal point for performing ongoing analyses to gain increasing levels of confidence that systems will support their business and mission goals.

The SEI developed principles, methods, foundations, techniques, tools, and materials in support of creating, fostering, and stimulating widespread transition of the ACE discipline.



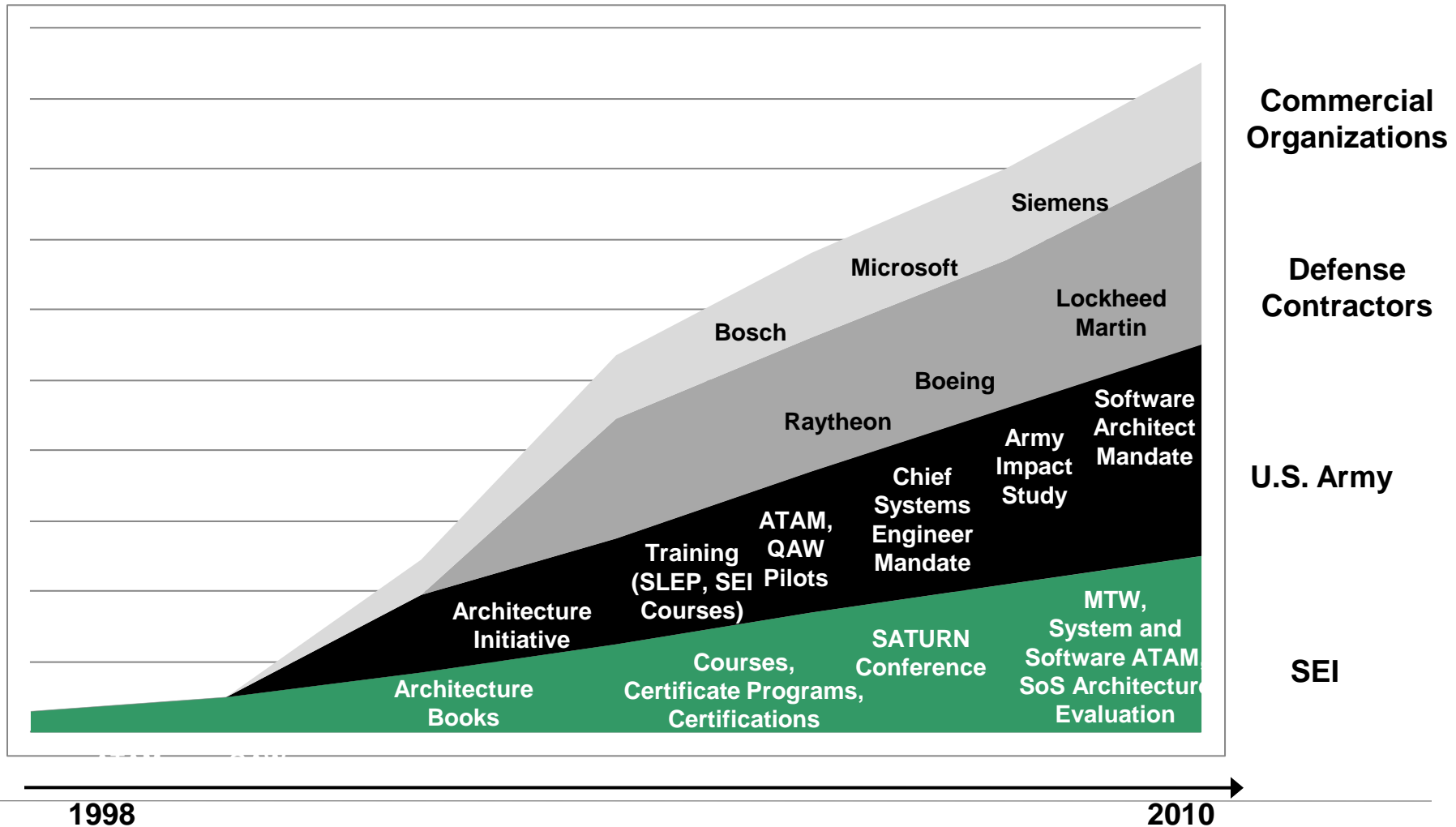
Our View: ACE Requires One Must



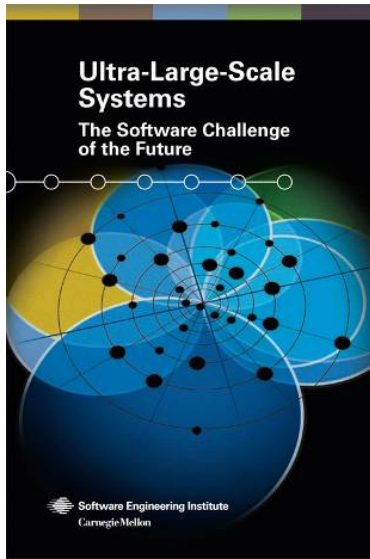
- *explicitly focus on quality attributes*
- *directly link to business and mission goals*
- *explicitly involve system stakeholders*
- *be grounded in state-of-the-art quality attribute models and reasoning frameworks*



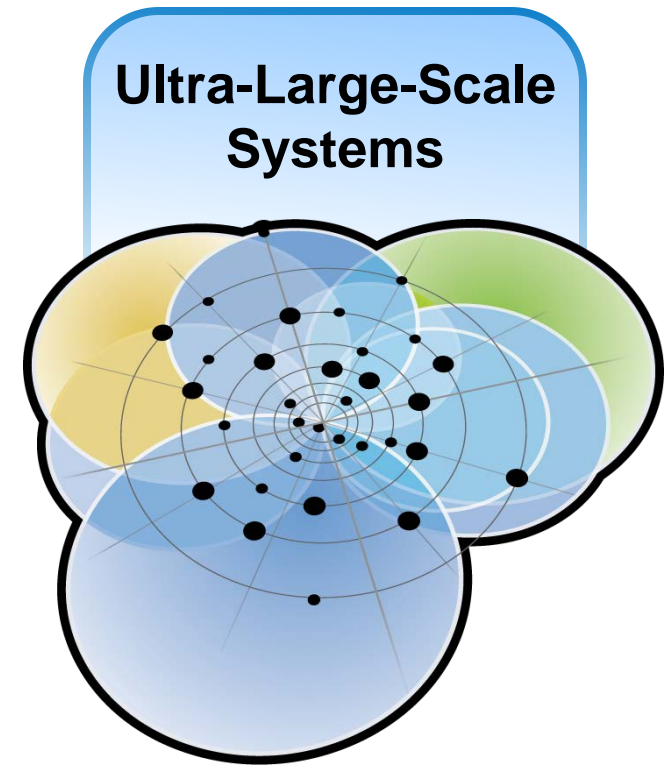
Trends in Institutionalizing Architecture Practices



Epiphany in 2006

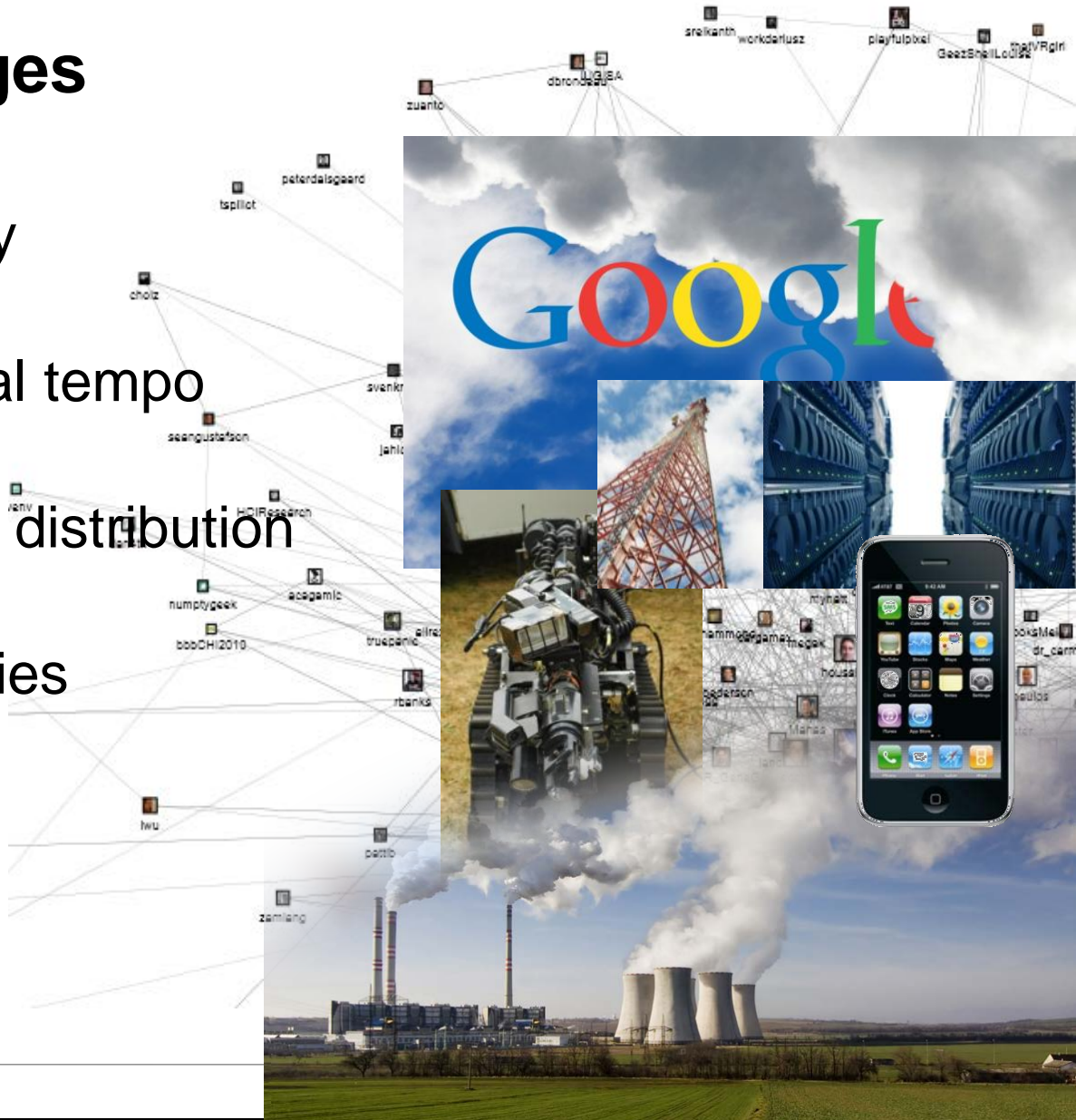


- Decentralization
- Inherently conflicting, unknowable, and diverse requirements
- Continuous evolution and deployment
- Heterogeneous, inconsistent, and changing elements
- Erosion of the people/system boundary
- Normal failures
- New paradigms for acquisition and policy



Today's Challenges

- Scale and complexity
- Increased operational tempo
- Decentralization and distribution
- Disruptive technologies



Architecture Challenges

- What is the architecture of a socio-technical, cyber-physical system?
- What are the quality attributes that apply? And what are the underlying models?
- How can stakeholders be involved?
-



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